Saurornitholestes

Saurornitholestes ("lizard-bird thief") is a genus of carnivorous dromaeosaurid theropod dinosaur from the late Cretaceous of Canada (Alberta), United States (Montana, New Mexico, Alabama, North Carolina, and South Carolina).

Two species have been named: *Saurornitholestes langstoni* in 1978 and *Saurornitholestes sullivani* in 2015. *Saurornitholestes* was a small bipedal meat-eating dinosaur, equipped with a sickle-claw on the foot.

Contents

Discovery and naming
Formerly assigned species
Description
Classification
Paleobiology
Feeding habits
Paleoecology
Bite marks from tyrannosaur
See also
Footnotes
References

Discovery and naming

Foot of *S. langstoni*

In 1974 Canadian amateur paleontologist Irene Vanderloh discovered the skeleton of a small theropod near Steveville in Alberta. She showed it to John Storer of the Provincial Museum of Alberta, who brought it to the attention of Hans-Dieter Sues. In 1978 Sues named and described the specimen as the type species *Saurornitholestes langstoni*. The generic name is in reference to the Saurornithoididae, due to the resemblance with this

Saurornitholestes
Temporal range: Late Cretaceous, 77–74 Ma

Pre€ € O S D C P T J K PgN

Possible Cretaceous-Paleogene boundary record

Mounted skeleton, Museum of the Rockies

Scientific classification

Kingdom:	Animalia
Phylum:	Chordata
Clade:	Dinosauria
Clade:	Saurischia
Clade:	Theropoda
Family:	†Dromaeosauridae
Subfamily:	†Saurornitholestinae
Genus:	†*Saurornitholestes* Sues, 1978

Type species

†***Saurornitholestes langstoni*** Sues, 1978

Species

- †***S. langstoni*** Sues, 1978
- †***S. sullivani*** Jasinski, 2015

Synonyms

group that is today seen as part of the Troodontidae, and combines their name with a Greek *lestes*, "thief". The specific name honours Wann Langston, Jr.

- *Bambiraptor*?
  Burnham *et al.*, 2000

The holotype specimen, TMP 1974.10.5, was uncovered in a layer of the Dinosaur Park Formation dating to the late Campanian. It consists of a very fragmentary skeleton including teeth, skull elements, two vertebrae, ribs, tail elements and a part of the hand. Also three paratypes were assigned: CMN 12343, CMN 12354, and UA 5283, all frontals.[1]

Two more complete and larger partial skeletons (RTMP 88.121.39 and MOR 660), dozens of isolated bones, and scores of teeth are today known from the badlands of Dinosaur Provincial Park in Alberta; most of these are housed at the Royal Tyrrell Museum of Palaeontology, in Drumheller, Alberta and remain undescribed. The Alberta and Montana remains are usually attributed to the single species *Saurornitholestes langstoni*, though they come from a variety of rock formations indicating a wide span of time; for example, the Oldman Formation (dated to about 77 million years ago[2]) and the upper Two Medicine Formation (about 72 million years ago). Similar teeth are found in younger deposits, dated to around 70 to 69 million years ago,[3] but whether they represent *S. langstoni* or a different, related species is unknown. Neonate-sized *Saurornitholestes* fossils have been reported in the scientific literature.[4]

Fragmentary fossils of *Saurornitholestes* have also been found from the eastern half of North America. A tooth found in the Mooreville Chalk of Alabama has been assigned to the genus. In 2015, Schwimmer et al. identified the existence of *Saurornitholestes langstoni* from the Tar Heel, Coachman, and Donoho Creek formations of North and South Carolina based on diagnostic teeth and a pedal ungual. This also makes *S. langstoni* the only dromaeosaurid taxon reported with certainty from the East Coast.[5]

Saurornitholestes sullivani is known from the Hunter Wash fauna of the Kirtland Formation in New Mexico, based on the frontal SMP VP-1270. It differs from *S. langstoni* in the characters of the frontal.[6]

A well-preserved skeleton of *Saurornitholestes* discovered in 2014 is currently under preparation by University of Alberta paleontologists working in Japan.[7] After examining the skull of that specimen, Currie and Evans announced in 2019 that the *Zapsalis* teeth from the Dinosaur Park Formation represented the second premaxillary tooth of *S. langstoni*.[8]

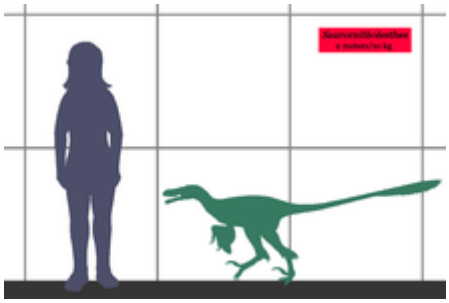
Formerly assigned species

In 2006 Robert Sullivan named and described a second nominal species, *Saurornitholestes robustus*, based on holotype SMP VP-1955, a left frontal. The specific name refers to the great thickness of this bone, the only trait in which the species is known to differ from *S. langstoni*. The holotype was found in the Willow Wash fauna of the Kirtland Formation in New Mexico, dated to about 73 million years ago.[9] However, a subsequent overview of dromaeosaurid phylogeny asserted that *S. robustus* lacked dromaeosaurid characters and should be considered an indeterminate theropod,[10] and a study published in 2014 took the conclusion a step further by demonstrating that *S. robustus* was assignable to Troodontidae based on similarities with troodontids.[11]

Possible indeterminate fossils are known from the Hell Creek Formation in Montana, North Dakota, and South Dakota, dated to about 66 million years ago.[12]

Description

Like other theropods in the Dromaeosauridae, *Saurornitholestes* had a long, curving, blade-like claw on the second toe. *Saurornitholestes* was more long-legged and lightly built than other dromaeosaurids such as *Velociraptor* and *Dromaeosaurus*. It resembles *Velociraptor* in having large, fanglike teeth in the front of the jaws. *Saurornitholestes* most closely resembles *Velociraptor*, although the precise relationships of the Dromaeosauridae are still relatively poorly understood.



Size of *S. langstoni* compared to a human

Saurornitholestes was about 1.8 m (5.9 ft) long[13] and weighed approximately 10 kg (22 lb).[14] At the hip it stood 0.6 meters (2 feet), or around as tall as the length of a terrier.

Saurornitholestes sullivani is thought to have had a keen sense of smell, due to its skull suggesting an unusually large olfactory bulb.[15]

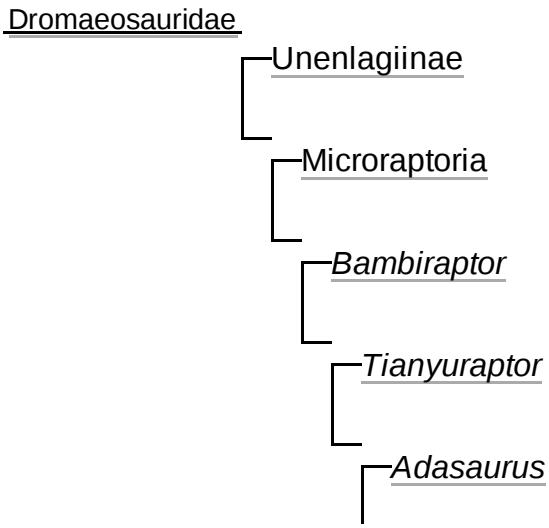
The second premaxillary teeth of (at least) *Saurornitholestes*, *Velociraptor*, and *Bambiraptor* may have been structurally specialized for preening feathers. This may also have been the function of the unusual premaxillary teeth of the oviraptorosaurs *Protarchaeopteryx* and *Incisivosaurus*.[8]

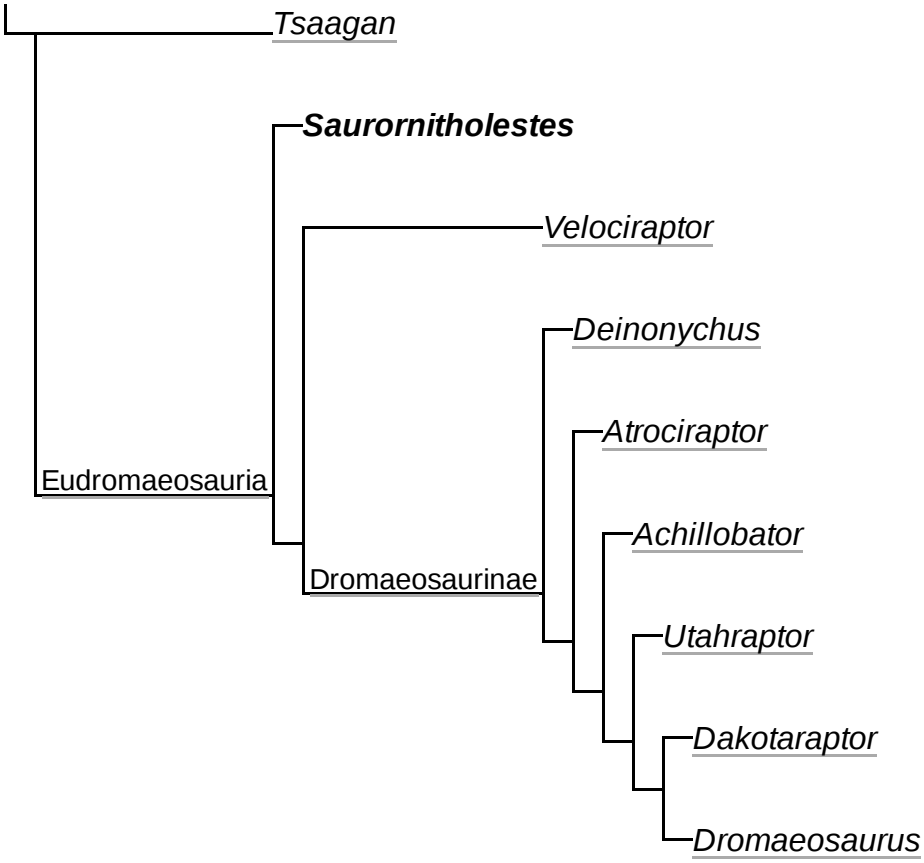
Classification

In 1978 Sues assigned *Saurornitholestes* to the Dromaeosauridae. Later studies most often found it a member of the dromaeosaurid Velociraptorinae, but a cladistic analysis by Philip J. Currie in 2009 recovered a position in a more basal dromaeosaurid clade that was named the Saurornitholestinae.

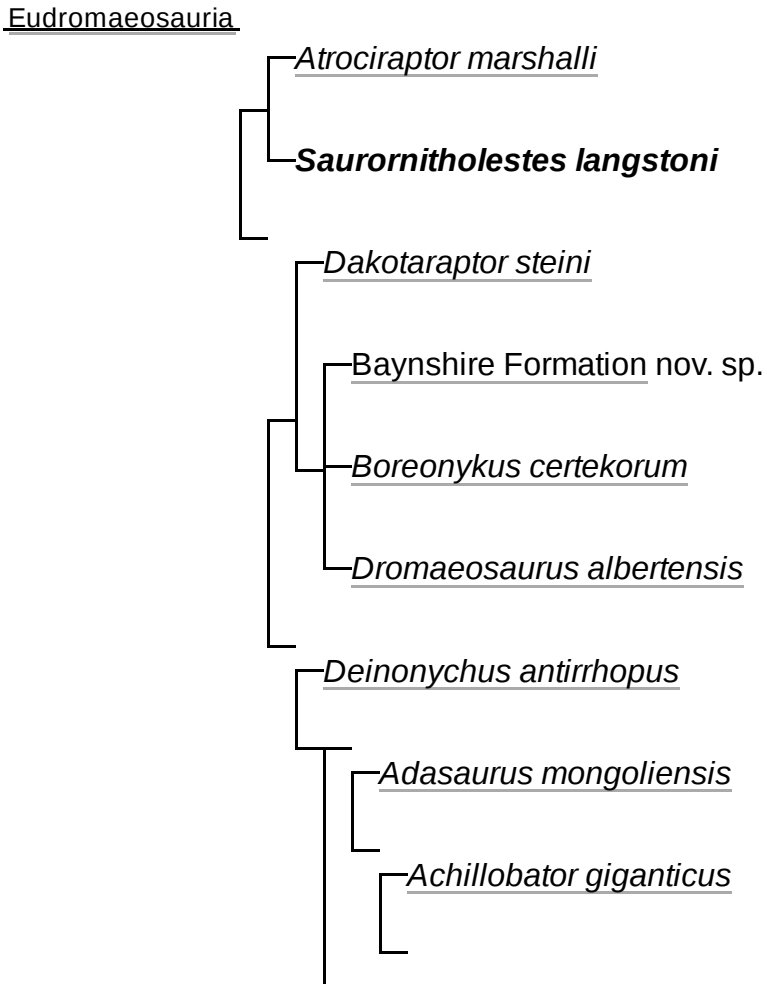
The cladogram below follows a 2015 analysis by paleontologists Robert DePalma, David Burnham, Larry Martin, Peter Larson, and Robert Bakker, using updated data from the Theropod Working Group.[16]

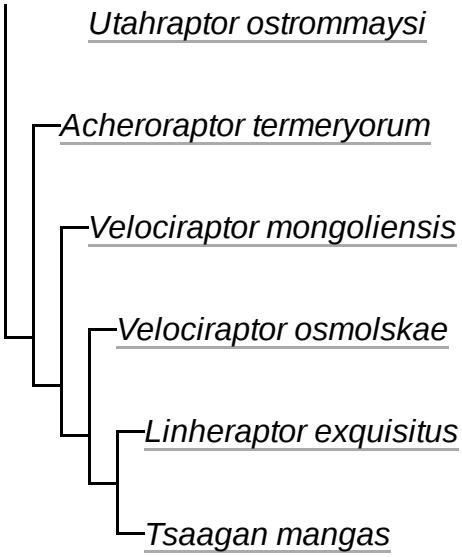
Reconstructed *S. langstoni* skull





Another cladogram was recovered in a 2019 analysis by Philip J. Currie and David C. Evans. Currie and Evans recovered *Saurornitholestes* as the sister taxon of *Atrociraptor*.[8]





Paleobiology

In 2001, Bruce Rothschild and others published a study examining evidence for stress fractures and tendon avulsions in theropod dinosaurs and the implications for their behavior. They found that only two of the 82 *Saurornitholestes* foot bones checked for stress fractures actually had them. Two of the nine hand bones examined for stress fractures were found to have them.[17]

Feeding habits

Restoration of an *S. langstoni* digging a multituberculate out of a burrow

Saurornitholestes' feeding habits were discovered to be typical of coelurosaurian theropods, with a characteristic "puncture and pull" feeding method. Studies of wear patterns on the teeth of this animal by Angelica Torices *et al.* in a study regarding theropod feeding habits indicate that dromaeosaurid teeth share similar wear patterns to those seen in the tyrannosauridae and troodontidae, respectively. However, micro-wear on the teeth indicated that *Saurornitholestes* likely preferred larger prey items than the troodontids it shared their environment with. Such differentiations in its diet likely allowed the theropod to inhabit the same environment as its more distant maniraptoran relations. The same study also indicated that both *Saurornitholestes* and the related *Dromaeosaurus* (also analyzed in the study) likely included bone in their diet and were better adapted to handle the stresses associated with attacking struggling prey while troodontids, equipped with weaker jaws, preyed on softer animals and prey items such as invertebrates and carrion. This feeding strategy and ability to handle struggling prey was also a feature that the dromaeosaurid also shared with tyrannosaurids such as *Gorgosaurus*, which was also analyzed in said study alongside these smaller theropods.[18][19]

Paleoecology

Saurornitholestes was found on both sides of the Western Interior Seaway. Alberta, the location of *Saurornitholestes langstoni*, had a habitat similar to the United States Middle West being plains[20] and floodplain swamps.[21] In its eastern range, *Saurornitholestes* lived alongside hadrosaurs like *Eotrachodon* and *Hypsibema*, large theropods like *Appalachiosaurus* and *Dryptosaurus*, an unidentified ornithomimosaur, and another unidentified small theropod that was likely either a dromaeosaurid or a troodontid.[5]

Saurornitholestes appears to have been the most common small theropod in Dinosaur Provincial Park, and teeth and bones are much more common than those of its more massive contemporary, *Dromaeosaurus*. Little is known about what it ate and how it lived, but a tooth of *Saurornitholestes* has been found embedded in the wing bone of a large pterosaur, probably a juvenile *Quetzalcoatlus*.[22] Because the pterosaur was so much larger than *Saurornitholestes*, Currie and Jacobsen suggest that the theropod was probably scavenging the remains of an already dead animal.[22]

Bite marks from tyrannosaur

Aase Roland Jacobsen published a description of a *Saurornitholestes* dentary in 2001.[23] The dentary is about 12 cm long and preserves fifteen tooth positions, of which only ten preserve teeth.[24] Three toothmarks were visible on the inner "lingual" surface of the dentary.[24] Two of the three marks are series of grooves made by the serrations on the maker's teeth.[24] The striations are between .37 mm and .40 mm thick with cuboidal cross-sections.[25]

The shape of the preserved serrations are too different from those of *Saurornitholestes* for the marks to be the result of injuries incurred during intraspecific face biting behaviors.[26] Although the right shape for *Dromaeosaurus* tooth serrations, the preserved marks are too coarse to have been left by that genus.[26] Although a specific identification cannot be made, the most likely perpetrator would be a juvenile individual of one of the Dinosaur Park Formation's tyrannosaurids, like *Gorgosaurus*, or *Daspletosaurus*.[27]

See also

- Timeline of dromaeosaurid research

Footnotes

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20. writer, Bob Strauss Bob Strauss is a freelance; Print, Editor with Over 25 Years of Experience in; books, online media He is the author of three. "Meet the Raptor Dinosaurs of the Mesozoic Era" (https://www.thoughtco.com/raptor-dinosaur-pictures-and-profiles-4047613). *ThoughtCo*. Retrieved 14 February 2019.
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